

I. Project Title:

Monitoring program for razorback sucker in the Green and Upper Colorado River Systems.

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III. Project Summary:

The federally endangered razorback sucker (*Xyrauchen texanus*), once common and widespread throughout large rivers of the Colorado River Basin, is now rare. A monitoring program was designed to track the status of razorback sucker in the upper Colorado River basin and to evaluate the response of populations to recovery actions. The goal of this program is to implement a standardized, long-term, monitoring program for razorback sucker populations in the Green River and upper Colorado River systems. Initial emphasis of the razorback sucker monitoring program is in the Green River system because it contains the largest extant riverine population, but monitoring will ultimately be expanded once razorback suckers are reestablished elsewhere. Larval and adult life stages of razorback sucker are monitored annually to determine trends in their relative abundance and distribution over time. In the Green River system, distribution and abundance of early life stages of razorback sucker are monitored by light - trapping in low-velocity habitat. Adult distribution and abundance are monitored by sampling with fyke nets and electrofishing in channel margin habitat. This monitoring should continue in future years to document recovery of razorback sucker in the upper Colorado River Basin.

IV. Study Schedule:

- a. Initial year: 1996
- b. Final year: uncertain due to funding changes in FY-2000

V. Relationship to RIPRAP: (*April 2000 Version*)

General Recovery Program Support Action Plan

- V. Monitor populations and habitat and conduct research to support recovery actions, research, monitoring, and data management.

Green River Action Plan - Mainstem

- IIA. Restore and manage Flooded Bottomland Habitat

Colorado River Action Plan - Mainstem

- IIA. Restore and manage Flooded Bottomland Habitat

Colorado River Action Plan - Gunnison River

- IIA. Restore and manage Flooded Bottomland Habitat

VI. Accomplishment of FY 2000 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

The four major tasks outlined in the initial scope of work that was submitted for funding in spring 2000 were:

Task 1. Develop and evaluate strategies for effective, standardized sampling of adult razorback sucker in the middle Green River and monitor relative abundance,

Task 2. Develop and evaluate strategies for effective, standardized sampling of adult razorback sucker in the lower Green River,

Task 3. Monitor relative abundance of larval razorback sucker in the middle Green River, and

Task 4. Monitor relative abundance of larval razorback sucker in the lower Green River.

These tasks were modified by the Program Directors office. It was decided that no field sampling should occur in 2000 and the monitoring program data collected to date should be fully analyzed and summarized and the whole scope of the program re-evaluated. At the request of several members of the Biology Committee, funding was retained for field sampling of larvae with light traps in the middle Green River. That information would provide the opportunity for real-time management of flow and temperature regimes from Flaming Gorge Dam. Thus, only two tasks remained for this scope of work.

Task 1. Monitor relative abundance of larval razorback sucker in the middle Green River.

Task 2. Process samples, analyze data, integrate results of all sampling efforts, prepare overall

annual report, and revise monitoring plan.

Processing of light trap samples collected in 2000 is nearly complete; all that remains is to verify the identity of some problematic specimens and to catalog all specimens into the collection.

A total of 95 samples was collected in 2000, beginning on 18 May and ending on 22 June. Primary sampling sites were Cliff Creek, Stewart Lake and Stewart Lake drain, Greasewood Corral, Old Charlie Wash and Old Charlie Wash outlet.

A total of 2,822 specimens in 12 fish species were detected in samples collected in 2000 (Table 1). Most (61%) of those fish were flannelmouth suckers, followed in abundance by red shiners, fathead minnows, bluehead suckers, sand shiners, and razorback suckers.

A total of 78 razorback sucker larvae were captured in 2000. Another three razorback sucker larvae that were of questionable taxonomic identity were captured as well, for a total of 81. Razorback suckers were first captured on 23 May at the Cliff Creek sampling site, when nine larvae were captured (Fig. 1). The largest sample collected in 2000 was 28 larvae captured on 5 June at Cliff Creek. The last razorback sucker larvae captured in 2000 was on 22 June and it was 16 mm total length (TL).

All razorback sucker larvae captured in 2000 were 10 to 16 mm TL, and all but two of those were 13 mm TL or less (Fig. 2). Relatively small razorback sucker larvae (< 12 mm TL) were captured from 22 May to 8 June, which suggested a relatively short spawning season.

Preparation of the summary report and revision of the monitoring plan is ongoing and still on schedule for a draft report in spring 2001, as per the revised scope of work for FY 2000. Most data has been proofed, analyzed, and summarized and we are proceeding with writing the report. Previous discussions with other researchers has led to inquiries regarding development of abundance estimates for adult razorback suckers based on data collected in recent years. The goal of this final report data analysis is to complete the most rigorous data analysis possible. Unfortunately, the adult data in most years is sparse, both in terms of numbers of fish captured and the number of recaptures in consecutive years. Recall that Modde et al. (1996) used data collected in consecutive years as samples, and used the number of captured and recaptured razorback sucker among those pairs of years to generate Lincoln-Petersen estimates of abundance. Preliminary analysis of 1996 to 1999 data suggested that several fish captured in each year were recaptures, few or none of those were recaptures from the previous year. Thus, abundance estimates derived by the method used by Modde et al. (1996) may not be possible.

VII. Recommendations:

1. Continue both adult and larval monitoring.
2. Prepare final report by spring 2001, as specified in the SOW and implement recommendations.

VIII. Project Status:

The project has been reduced due to funding constraints as previously described. Larval monitoring in the middle Green River, and final report preparation and monitoring program evaluation are the only funded components for FY 2000.

IX. FY 2000 Budget Status

A.	Funds Provided:	\$ 93.5 K
B.	Funds Expended:	\$ 48.5 K
C.	Difference:	\$45 K

The LFL share of the FY 2000 budget was 20.5K for sample analysis and cataloging and 35K for report preparation, for a total of 55.5K. The LFL has 29K of that remaining, 8K for finalizing sample work and the remainder for report preparation. The Vernal office of the U. S. Fish and Wildlife Service received a total of 30.5K in FY 2000, 23K for sampling work and 7.5K for report writing assistance. The 7.5 K for report writing is assumed to remain since they have not yet been asked to assist the LFL. The Vernal office of the Utah Division of Wildlife Resources also received 7.5K, and we assume that that amount also remains since they have not yet been asked to assist the LFL

- C. Percent of the FY 2000 work completed, and projected costs to complete: about 50% complete, \$45,000 necessary to complete current projects.
- D. Recovery Program funds spent for publication charges: \$ 0

X. Status of Data Submission (Where applicable):

The 2000 data will be submitted when specimen identity verifications are completed and when the final report is submitted in spring 2001. This will facilitate correction of any errors noted during additional data manipulation and report preparation.

XI.	Signed: <u>Kevin R. Bestgen</u>	<u>12/7/2000</u>
	Reporting Principal Investigator	Date

Modde, T., K. P. Burnham, and E. J. Wick. 1996. Population status of the razorback sucker in the middle Green River. Conservation Biology 10:110-119.

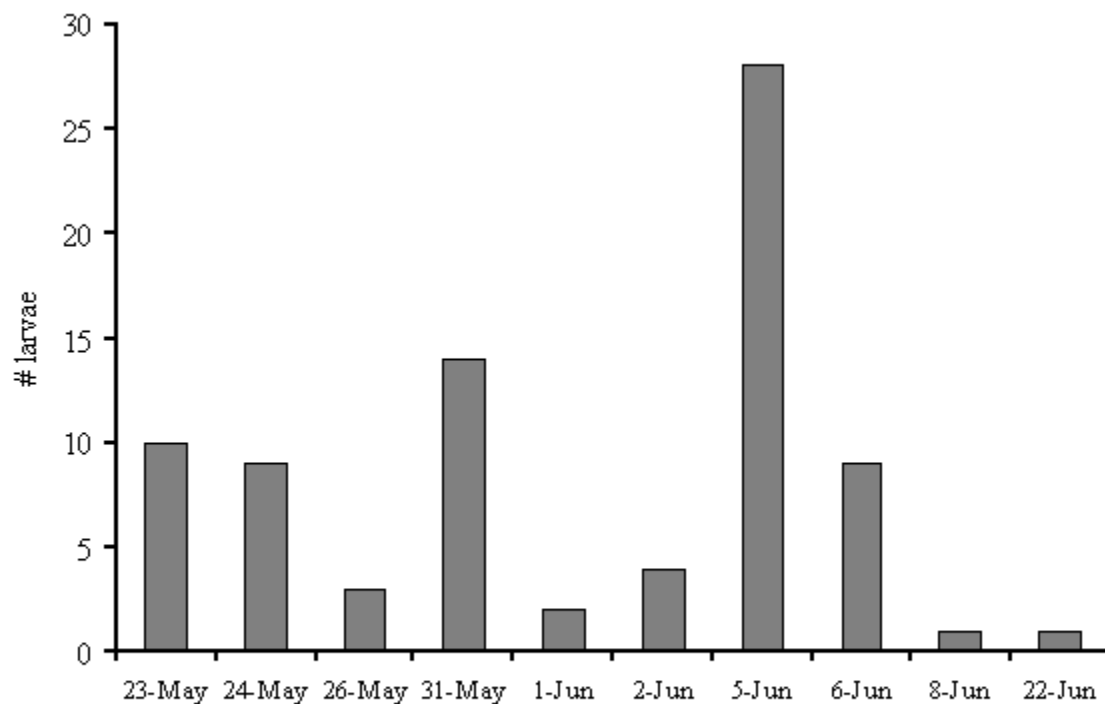


Fig. 1-- Number of razorback sucker larvae (N = 81) captured in light trap samples in the Middle Green River, UT, 2000.

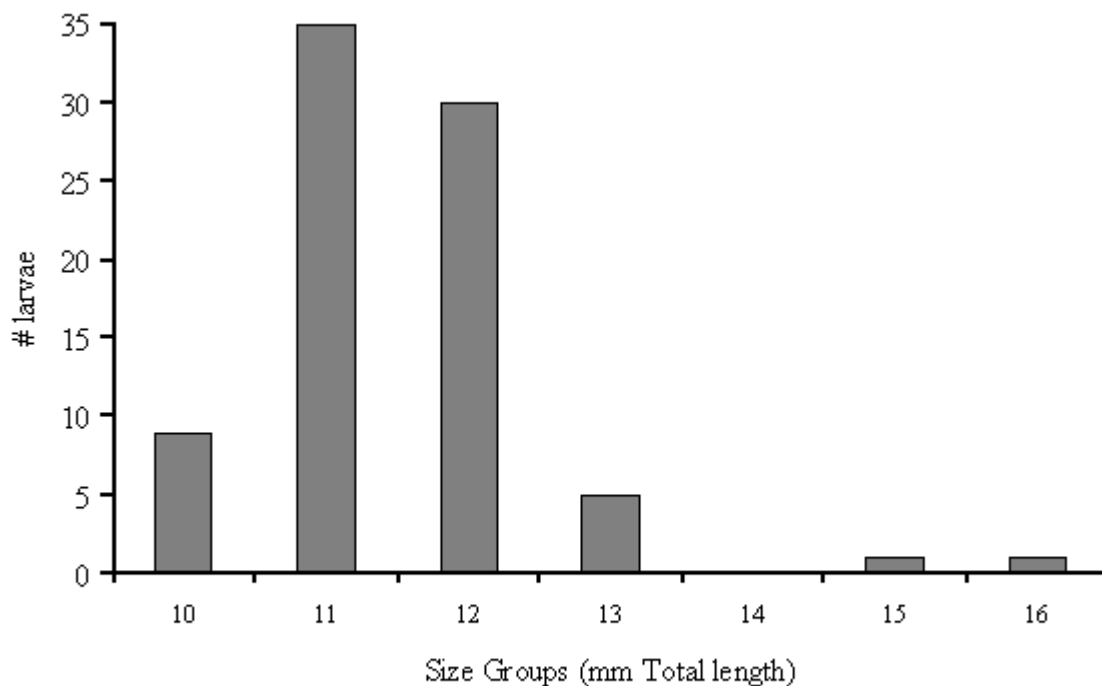


Fig. 2-- Length frequency histogram for razorback sucker larvae (N = 81) captured in light trap samples in the Middle Green River, UT, 2000.

Table 1.—Species composition and size distribution of fishes captured in light trap samples collected in the middle Green River, UT, 2000.

SPECIES	<5mm	6-10mm	11-15mm	16-20mm	21-25mm	26-30mm	31-35mm	UNMEASURED	TOTAL
Bluehead Sucker	0	6	110	7	1	0	0	0	124
Common Carp	0	29	4	1	2	0	0	1	37
Fathead Minnow	37	114	10	0	0	1	0	2	164
Flannelmouth Sucker	0	0	343	1375	1	0	0	6	1725
Flannelmouth Sucker (?)	0	1	0	1	0	0	0	0	2
Green Sunfish	0	0	0	0	0	0	1	0	1
Kokanee	0	0	0	0	0	1	0	0	1
Redside Shiner	0	0	0	0	5	6	0	0	11
Red Shiner	0	8	99	264	128	46	5	0	550
Razorback Sucker	0	10	67	1	0	0	0	0	78
Razorback Sucker (?)	0	1	2	0	0	0	0	0	3
Speckled Dace	0	2	0	0	0	0	0	0	2
Sand Shiner	0	0	2	72	22	9	0	0	105
Unidentified Minnow	1	0	0	0	0	0	0	0	1
Unidentified Sucker	0	0	7	2	0	0	0	0	9
White Sucker	0	0	5	2	0	0	0	0	7
White Sucker (?)	0	0	1	1	0	0	0	0	2